

**DEFINITIVE COURSE RECORD**

Course Title	<b>HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning)</b>
Awarding Bodies	<b>Pearson</b>
Level of Award <sup>1</sup>	<b>FHEQ RQF Level 5</b>
Professional, Statutory and Regulatory Bodies Recognition	<b>Chartered Institute of Building Services Engineering</b>
Credit Structure <sup>2</sup>	<b>240 Credits Level 4: 120 Credits Level 5: 120 Credits</b>
Mode of Attendance	<b>Part-time</b>
Standard Length of Course <sup>3</sup>	<b>3 years part-time</b>
Intended Award	<b>HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning)</b>
Named Exit Awards	<b>HNC Construction and the Built Environment (Building Services Engineering)</b>
Entry Requirements <sup>4</sup>	<ul style="list-style-type: none"> <li>• <b>A BTEC Level 3 qualification in Construction and the Built Environment</b></li> <li>• <b>Other related level 3 qualifications</b></li> <li>• <b>An international equivalent of the above</b></li> </ul>
Delivering Institution(s)	<b>University of Suffolk at West Suffolk College</b>
UCAS Code	<b>Not applicable</b>

This definitive record sets out the essential features and characteristics of the HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) course. The information provided is accurate for students entering level 4 in the 2017-18 academic year.<sup>5</sup>

**Course Summary**

This pathway has eight units at level 4 and seven units at Level 5.

<sup>1</sup> For an explanation of the levels of higher education study, see the [QAA Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies \(2014\)](#)

<sup>2</sup> All academic credit awarded as a result of study at the University adheres to the [Higher education credit framework for England](#).

<sup>3</sup> Where the course is delivered both full-time and part-time, the standard length of course is provided for the full-time mode of attendance only. The length of the part-time course is variable and dependent upon the intensity of study.

<sup>4</sup> Details of standard entry requirements can be found in the [Admissions Policy](#)

<sup>5</sup> The University reserves the right to make changes to course content, structure, teaching and assessment as outlined in the [Admissions Policy](#).

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### **Purpose of the HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) (2017 onwards for new entrants)**

The purpose of HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) is to develop students as professional, self-reflecting individuals who are able to meet the demands of employers in the rapidly evolving engineering sector and adapt to a constantly changing world. The qualifications also aim to widen access to higher education and enhance the career prospects of those who undertake them.

### **Objectives of the HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning)**

The objectives of the HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) are as follows:

- To provide students with the core knowledge, skills and techniques that all engineers require, irrespective of future specialism, to achieve high performance in the engineering profession.
- To build a body of specialist knowledge, skills and techniques in order to be successful in a range of careers in engineering at the Associate Engineer or Operational Engineer level.
- To develop the skills necessary to fault find and problem solve in a timely, professional manner, reflecting on their work and contributing to the development of the process and environment they operate within.
- To understand the responsibilities of the engineer within society, and work with integrity, regard for cost, sustainability and the rapid rate of change experienced in world class engineering.
- To provide opportunities for students to enter, or progress in, employment within the engineering sector, or progress to higher education qualifications such as degrees and honours degree in engineering or a closely related area, by balancing employability skills with academic attainment.
- To provide opportunities for students to make progress towards achieving internationally recognised registration with a Professional Body regulated by the Engineering Council.
- To allow flexibility of study and to meet local or specialist needs.

We aim to meet these objectives by:

- Providing a thorough grounding in building services engineering principles at Level 5 that leads to specialisms relating to individual professions within the engineering sector.
- Equipping individuals with the essential qualities of an engineer, including integrity, regard for cost and sustainability, as they apply to a range of roles and responsibilities within the sector.
- Enabling progression to a university degree by supporting the development of academic study skills and the selection of appropriate units for study at Level 5.
- Enabling progression to further professional qualifications in specific engineering disciplines by mapping the units studied to the requirements of the Professional Bodies applicable to that discipline.
- Supporting a range of study modes and timeframes for completion of the qualifications.

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### Who is this qualification for?

The HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) are aimed at students wanting to continue their education through applied learning. Higher Nationals provide a wide-ranging study of the engineering and construction sector and are designed for students who wish to pursue a career in Construction and the Built Environment. In addition to the skills, knowledge and techniques that underpin the study of the sector, gives students experience of the breadth and depth of the sector that will prepare them for employment, progression within employment or further study.

### Course Aims

The HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) offers students a broad introduction to the subject area via a mandatory core of learning, while allowing for the acquisition of some sector-specific skills and experience through the specialist units in each pathway, with the opportunity to pursue a particular interest through the appropriate selection of optional units. Students will gain a wide range of sector knowledge tied to practical skills gained in research, self-study, directed study and workplace activities.

This qualification aims to:

- Develop a range of skills and techniques, personal qualities and attributes essential for successful performance in working life and thereby enable learners to make an immediate contribution to employment at the appropriate professional level
- Prepare for a range of technical and management careers in electrical engineering
- Communication engineering equipping individuals with knowledge, understanding and skills for success in employment in the electrical engineering-based industry
- Provide specialist studies relevant to individual vocations and professions in which learners are working or intend to seek employment in electrical engineering and its related industries
- Enable progression to or count towards an undergraduate degree or further professional qualification in Construction and the Built Environment (Building Services) or related area
- Provide a significant educational base for progression to Incorporated Engineer level.

### Course Learning Outcomes

The following statements define what students graduating from the HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) course will have been judged to have demonstrated in order to achieve the award. These statements, known as learning outcomes, have been formally approved as aligned with the generic qualification descriptor for level 5 awards as set out by the UK Quality Assurance Agency (QAA).<sup>6</sup>

1. Demonstrate an advanced knowledge and use of essential scientific principles and well established principles of Building Services Engineering Heating, Ventilation and Air Conditioning) to produce routine solutions to familiar building services engineering problems and using this knowledge to model and analyse routine building services electrical engineering systems, processes and products

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<sup>6</sup> As set out in the [QAA Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies \(2014\)](#)

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2. Apply major construction and the built environment building services management, mathematical and scientific principles which underpin the design and operation of building services engineering systems and an awareness of the functionality of standard methods, knowledge of the calculation of costs associated with building services engineered products and services, an understanding of modern measurement principles and how they are applied in industry, or using number systems, graphical and numerical methods, vectors, matrices and ordinary differential equations to analyse, model and solve realistic engineering problems.
3. Demonstrate the development of practical skills that are theoretically grounded, as required of heating, ventilation and Air conditioning engineers/technicians who are employed at a professional level in a variety of types of technical work, such as in: electrical, electronic or communication design, manufacture, maintenance and technical services areas of the engineering industry including management and consultancy
4. Engage in developing personal and professional skills required of employers, demonstrating the appropriate personal qualities and attributes consistent with professional practice in Engineering and preparing the student for a range of technical and management careers within the field.
5. Demonstrate an understanding of building management system topics and focussing on the use of these in complex buildings
6. Apply fundamental analytical knowledge and techniques used for analysis, modelling and solution of realistic engineering problems within building services engineering, for heating, ventilation and air conditioning.
7. Evidence a logical process of development by applying the concepts of a measurement system, the associated terminology and the correct applications of test equipment for particular engineering scenarios.
8. Use skills and knowledge developed during the course to select a project and agree specifications, implement and evaluate the project management techniques and procurement routes to enable a successful conclusion to the project.
9. Display an understanding of the limits of their knowledge, and how this influences analyses and interpretations based on that knowledge, as well as areas for potential further research

### **Course Design**

The HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) have been written and referenced against the Framework of Higher Education Qualifications (FHEQ) and Professional Body Standards in each pathway. The Pearson BTEC Higher Nationals in Construction and the Built Environment are set at Level 4 and 5.

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Holders of a HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) meet the academic requirements for Licentiate Grade membership of the Chartered Institute of Building Services.

### Course Structure

The HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) comprises the following modules at level 4 and 5. Although the table gives Specialist units to follow the Pearson’s guidelines, students will be required to successfully complete all of the units to gain the award of 240 units. The ‘Specialist’ units are those required to distinguish a Building Services HND from other distinct areas within the Built Environment umbrella such as, Civil Engineering, Construction, Building Surveying etc. There will be an opportunity for an exit award of an HNC when 120 credits at level four have been successfully completed.

Module Specifications for each of these modules is included within the course handbook, available to students on-line at the beginning of each academic year.

<b>Module Framework HND semesterised.</b>					
<b>Year</b>	<b>level</b>	<b>Module Title</b>	<b>Credit Value</b>	<b>Core/ Mandatory</b>	<b>Specialist</b>
1	4	Construction Technology	15	C/M	
1	4	Science and Materials	15	C/M	
1	4	Construction Practice and Management	15	C/M	
1	4	Mathematics for Construction	15	S/M	+
1	4	Individual Project	15	C/M	+
2	4	Principles of Heating Services Design and Installation	15	S/M	+
2	4	Principles of Ventilation and A/C Design and Installation	15	S/M	+
2	4	Principles of Public Health Engineering	15	S/M	+
2	5	Further Mathematics for Construction	15	S/M	+
2	5	Personal and Professional Development	15		
3	5	Environmental Assessment and Monitoring	15		
3	5	Building Management Systems	15	M	+
3	5	Advanced Heating, Ventilation & Air Conditioning Design & Installation	15		+

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3	5	Alternative Energy Systems Design and Installation	15		
3	5	Group Project (Pearson Set)	30	M	

### Awards

On successful completion of the course, students will be awarded a HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning). Students are able to leave the course with an award of an HNC in Construction and the Built Environment (Building Services) when all Level 4 modules are completed satisfactorily, by the end of the second year. However, it is anticipated that students will continue into the third year and complete with the HND award.

### Course Delivery

The course is delivered at the University of Suffolk at West Suffolk College. Students studying full-time on Pearson BTEC Level 5 Higher National Diploma in Construction and the Built Environment (Building Services Engineering, Heating, Ventilation and Air Conditioning) are likely to have 7.5 hours contact per week with approximately 17.5 hours independent study per week. This may vary during the three years.

### Course Assessment

A variety of assessments will be used on the course to enable students to experience and adapt to different assessment styles. The assessment methods used will be appropriate to assess each module's intended learning outcomes. Assessment on the course overall will be mainly coursework (including essays, reports, presentations, group work, reflective learning journals and research projects). The maths modules will be assessed via two time constrained assignments.

### Course Team

The academic staff delivering this course are drawn from a team that includes teaching specialists and current practitioners. All staff are qualified in their subjects with their own specialist knowledge to contribute.

### Course Costs

Students undertaking HND Construction and the Built Environment (Building Services Engineering – Heating, Ventilation and Air-conditioning) will be charged tuition fees as detailed below.

Student Group	Tuition Fees
Full-time UK/EU	£6,168 per year
Part-time UK/EU	£1,028 per 20 credit module £771 per 15 credit module
Full-time International	£6,168 per year
Part-time International	£1,028 per 20 credit module £771 per 15 credit module

Payment of tuition fees is due at the time of enrolment and is managed in accordance with the Tuition Fee Policy.

Students are likely to incur other costs for equipment, materials, optional field trips, exhibitions amounting to approximately £100 per year.

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**Academic Framework and Regulations**

This is a Pearsons qualification and full details of the regulations and specifications can be found at

<https://qualifications.pearson.com/en/qualifications/btec-higher-nationals/construction-and-the-built-environment-2017.html>.

This course is delivered according to the Framework and Regulations for Higher National Awards and other academic policies and procedures of the University and published on the [website](#).